



Intelligent Transport System

A vision of 21st Century Cities

Experiences in Japan



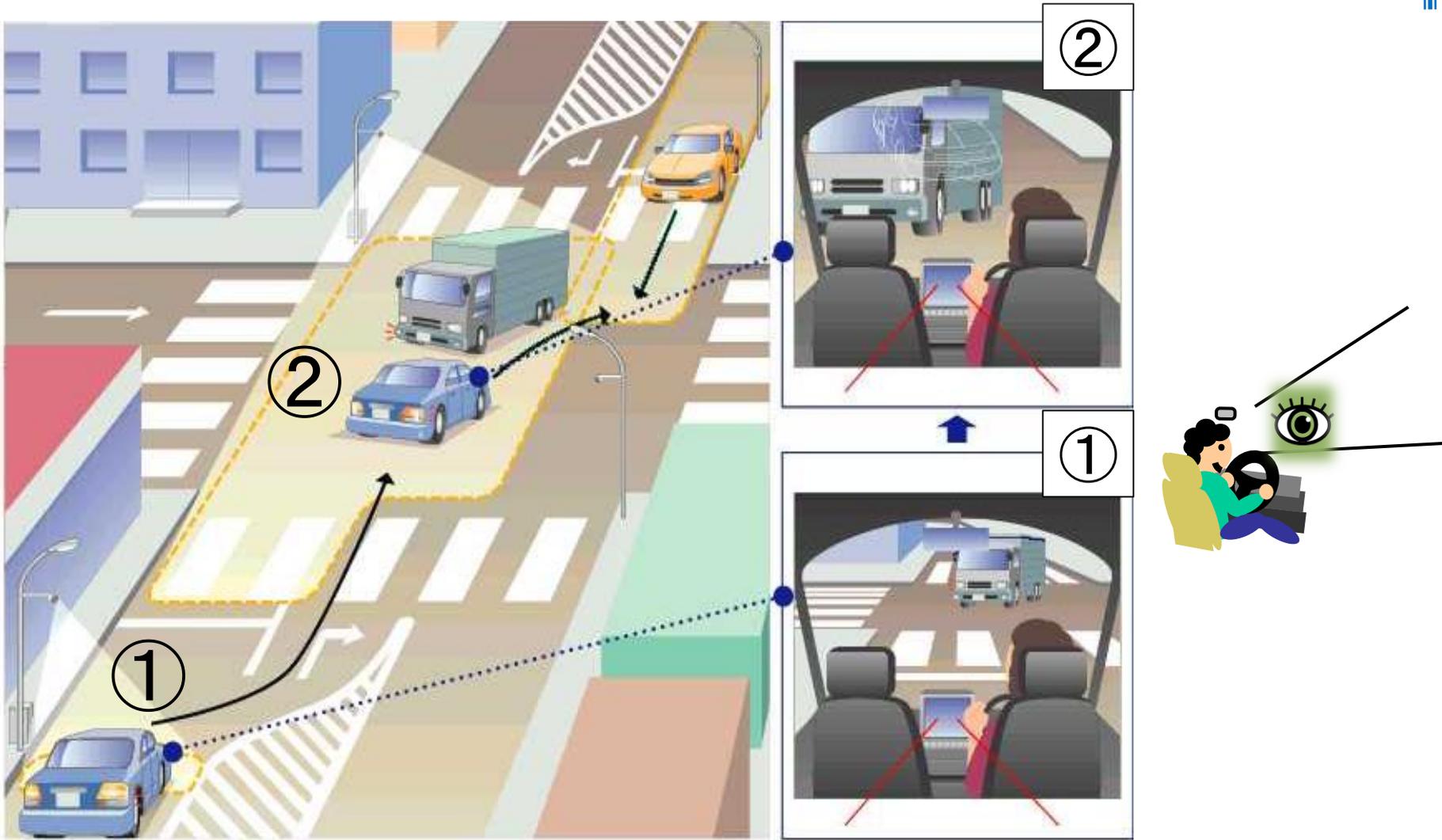
April 24, 2013

ITS Japan

Takahiko Uchimura



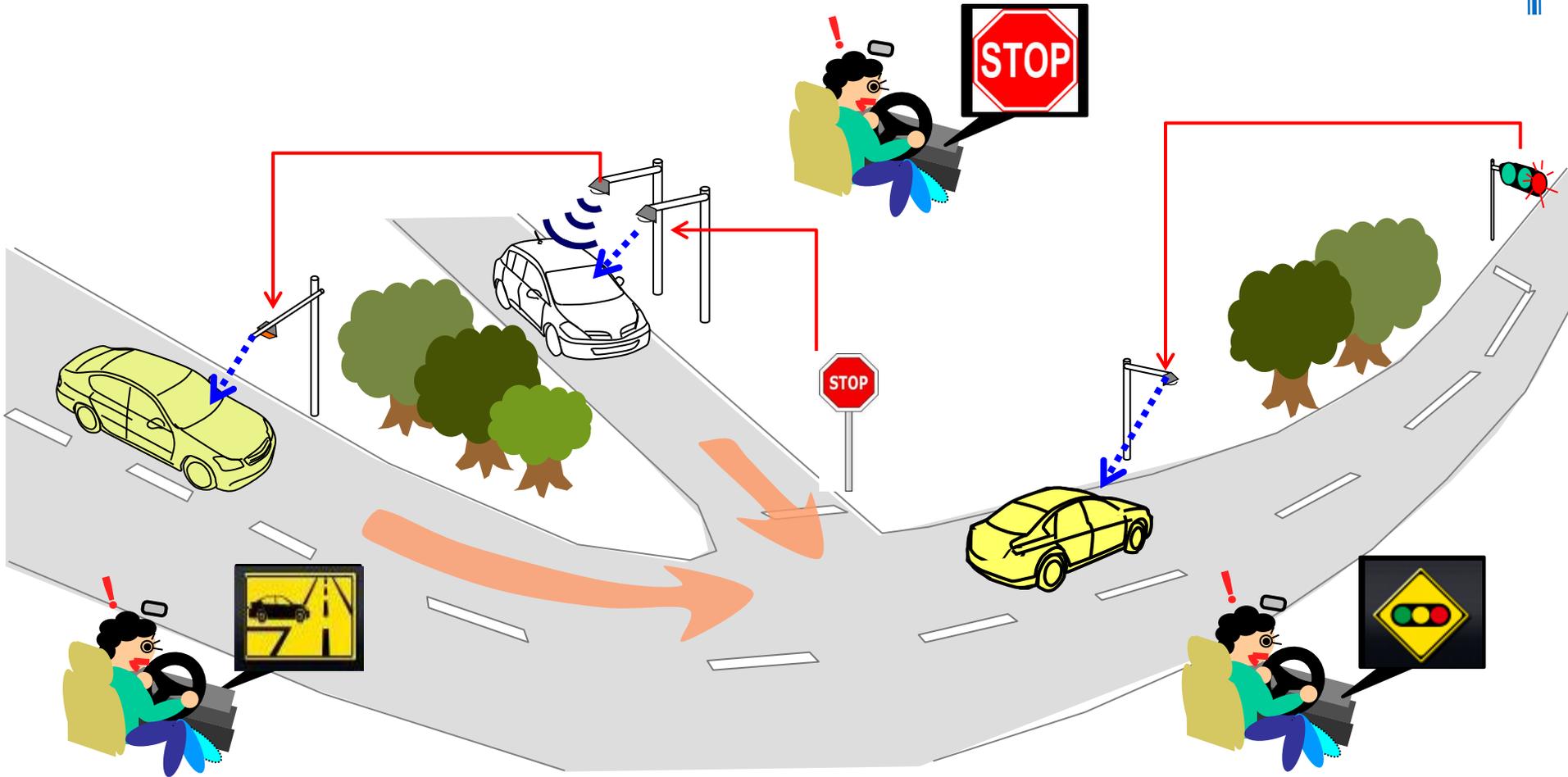
■ Judgment left to visual information





How we use ITS?

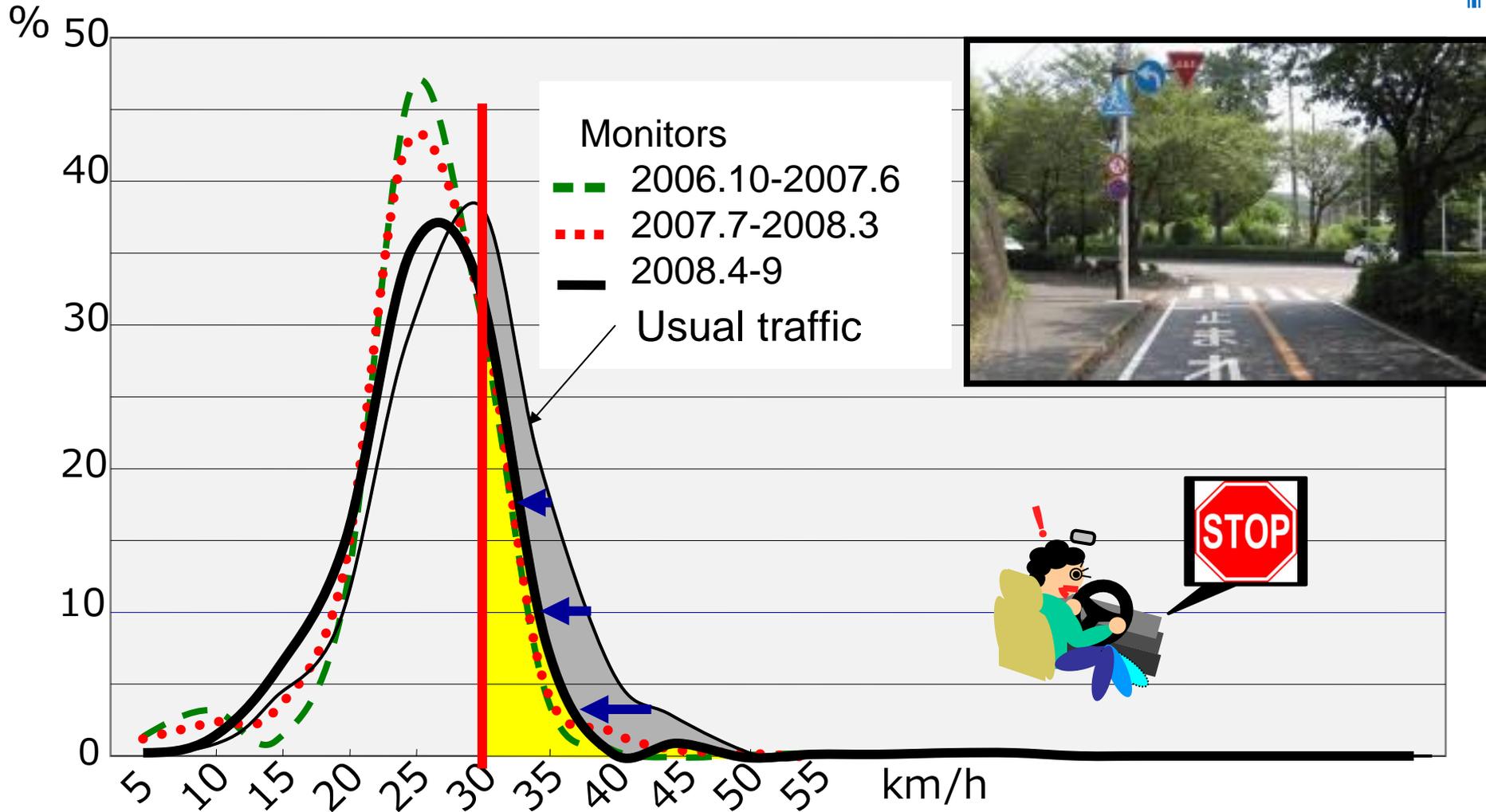
■ Support drivers





Stop Sign Recognition Enhancement

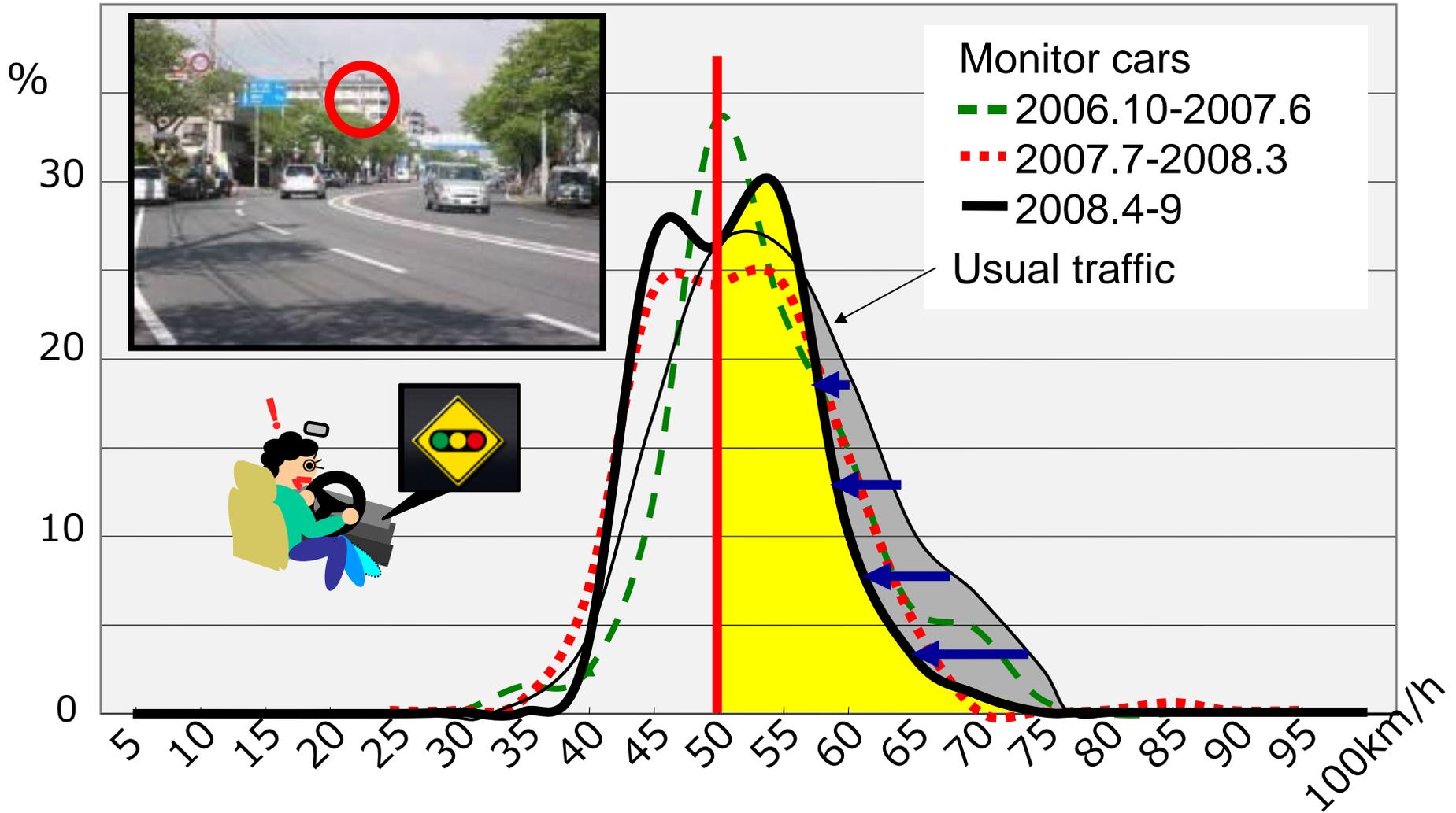
■ Cars over speed were reduced from 41% to 23%





Signal Recognition Enhancement

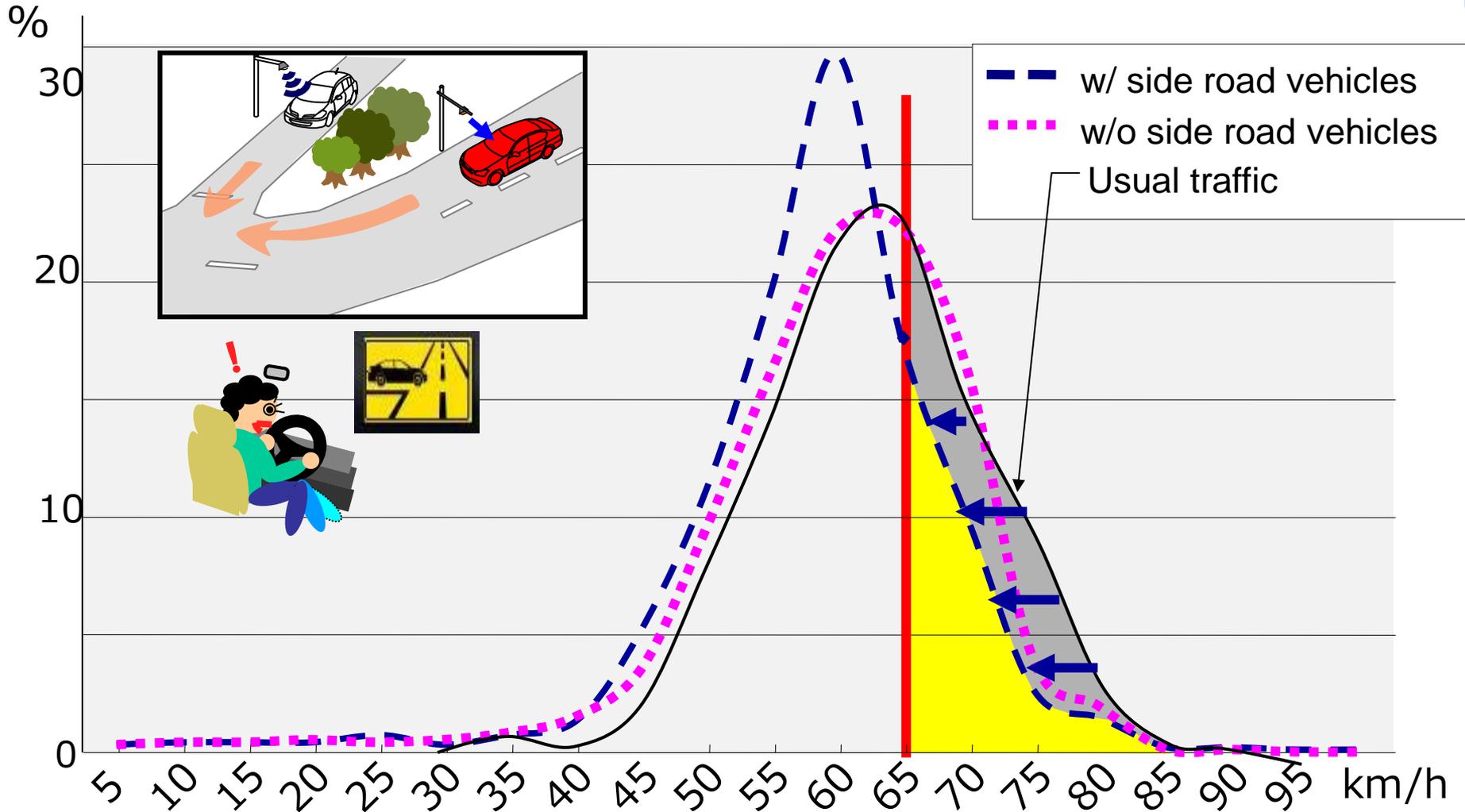
■ Cars over speed limit were reduced from 70% to 56%





Crossing Collision Prevention

■ Cars over speed limit were reduced from 38% to 22%

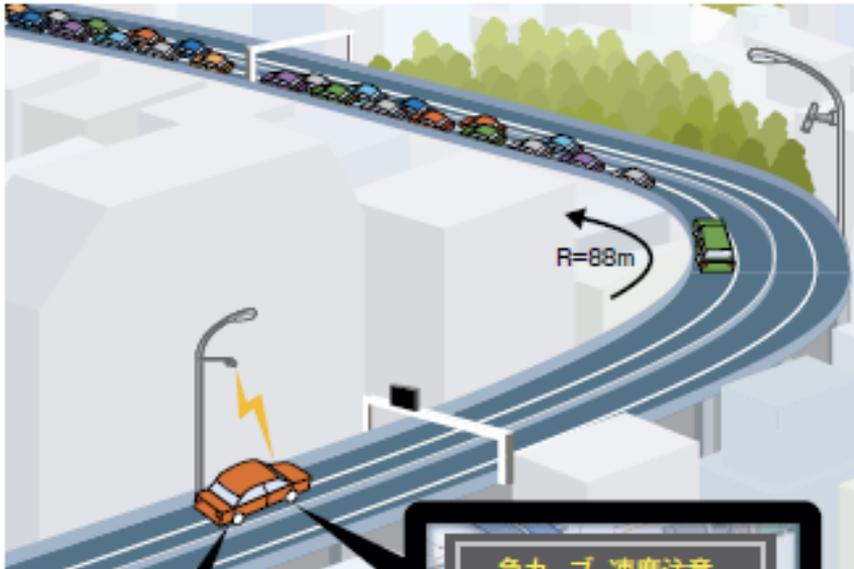




ITS Spots : Safety Driving Support



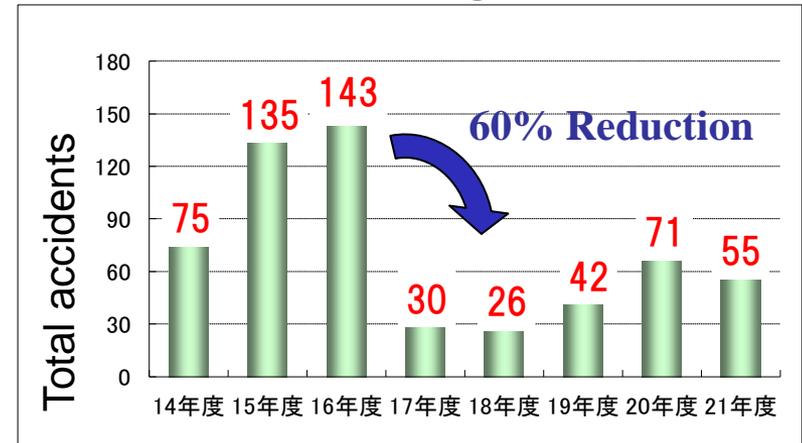
■ Rear end accidents were reduced 60%



“Congestion ahead. Danger of rear-ending.”

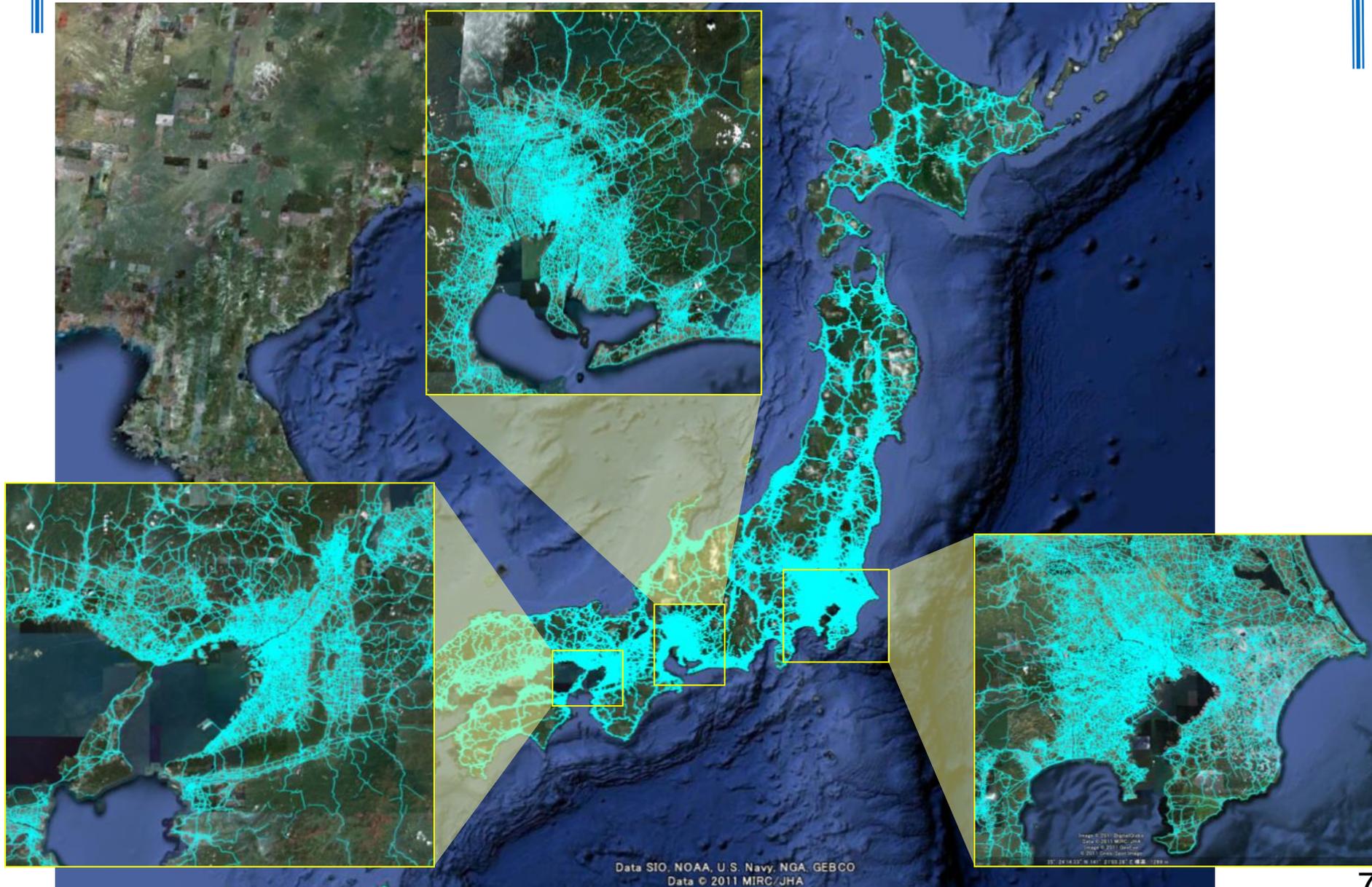
“ High accident curve ahead. Watch your speed”

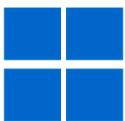
The accidents at Sangubashi Curve





Probe Car Data Collected by Private Sectors





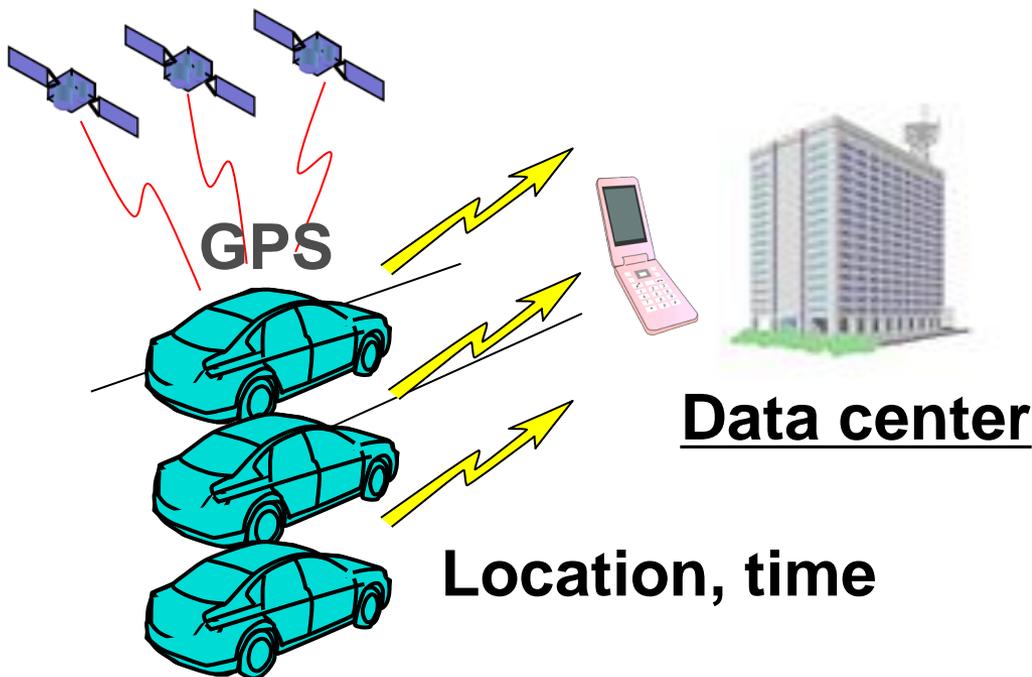
Use of Probe Data

- Collect Data from each car through a mobile phone

Probe data



Potential for various use



Accumulated probe data





“Fastest Route Guide” with Probe data

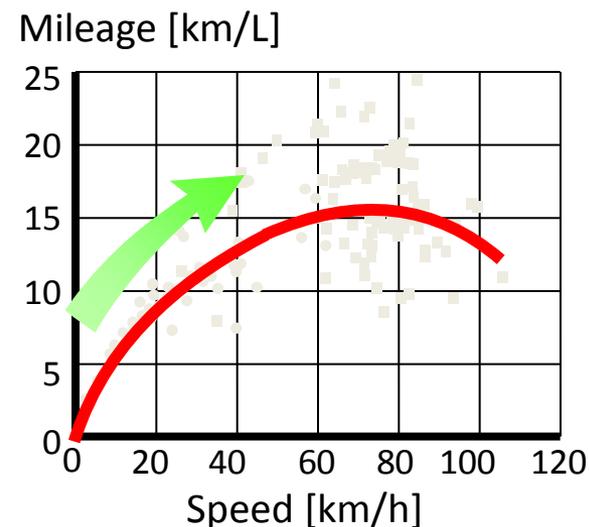
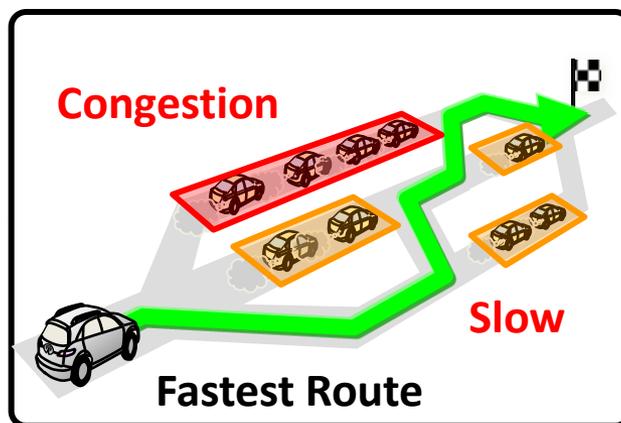
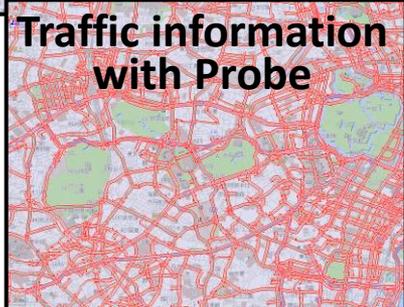


■ Benefit for both Driving convenience and environment

1. 20 % shorter Travel Time
2. 17 % less CO₂ Emission

Test results in Tokyo

Nissan CARWINGS



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20% shorter Travel Time

17% less CO₂



Daily passed road MAP by probe data



March 12, 2011



Growth of Passed road



Results of recovery works

Reference : WEATHERNEWS Inc.

Data provider : Honda Motor Co., Ltd.



Daily passed road MAP by probe data



March 14, 2011



Growth of Passed road



Results of recovery works

Reference : WEATHERNEWS Inc.

Data provider : Honda Motor Co., Ltd.



Daily passed road MAP by probe data



March 28, 2011



Growth of Passed road



Results of recovery works

Reference : WEATHERNEWS Inc.

Data provider : Honda Motor Co., Ltd.



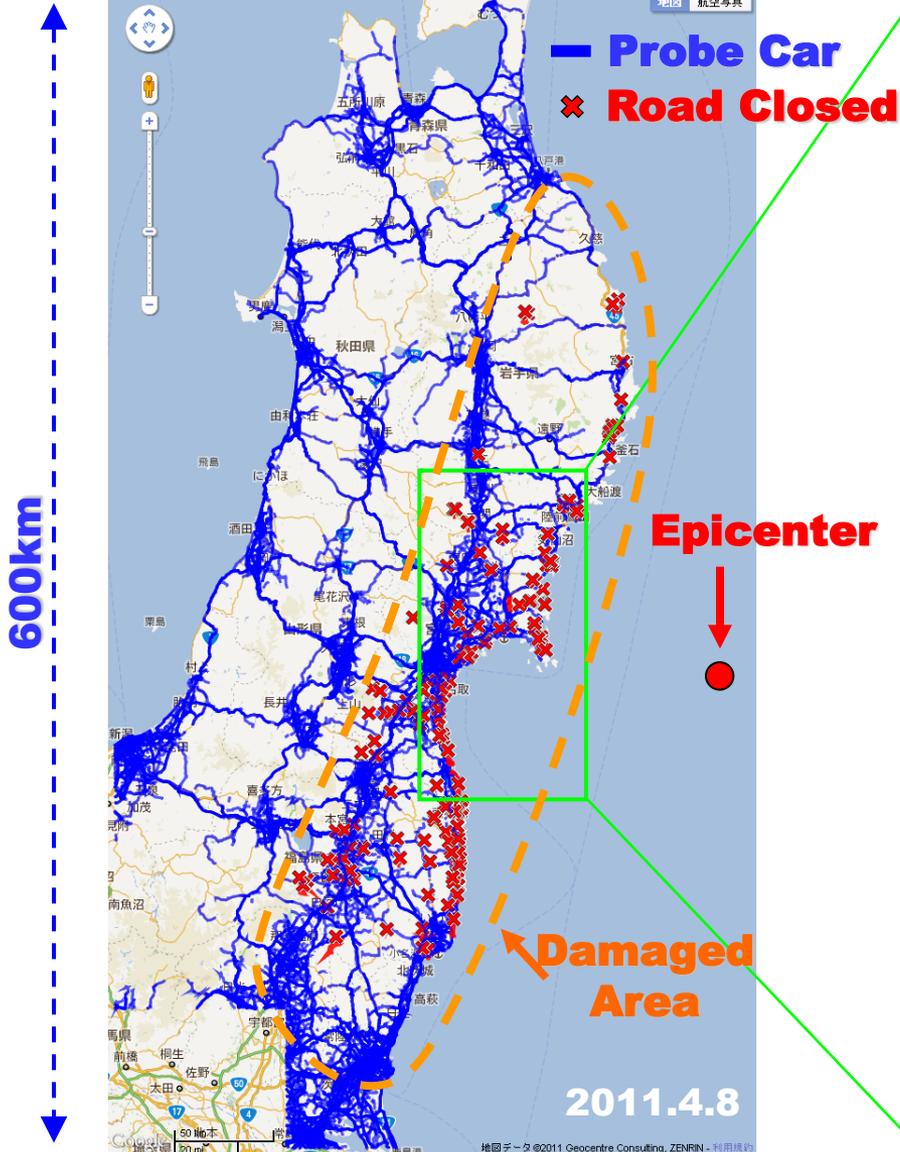
Passable Road Map



自動車通行実績・
通行止情報



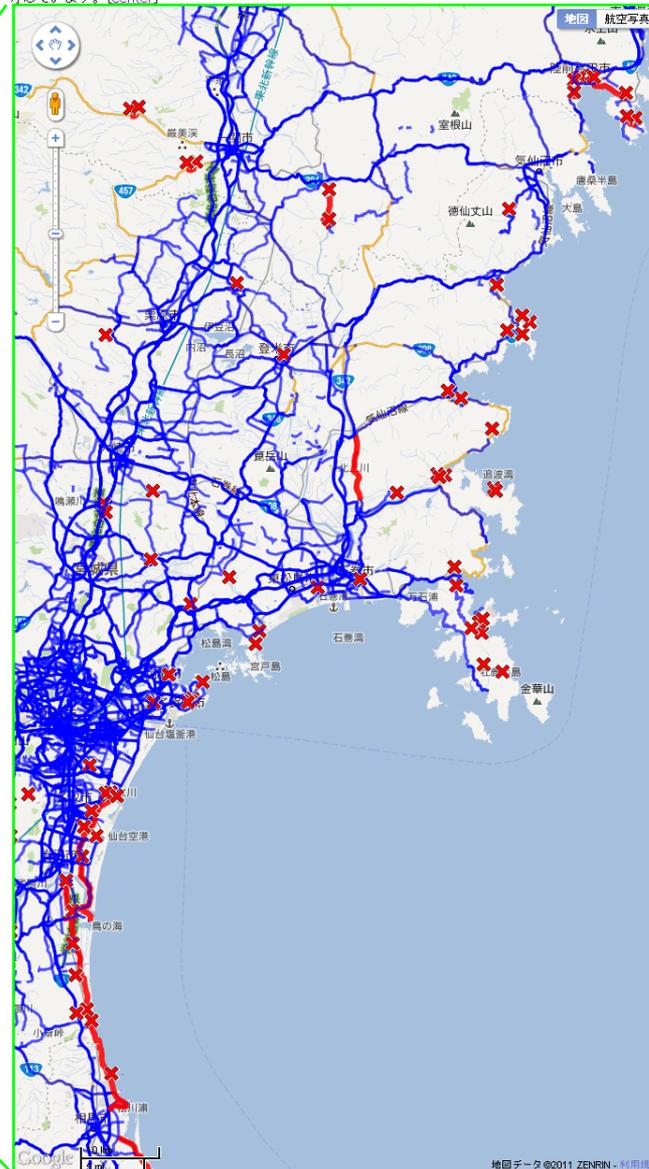
下記マップ中に青色で表示されている道路は、2011/4/8の0時~24時の間に通行実績のあった道路を示しています。[Center]



自動車通行実績・
通行止情報



下記マップ中に青色で表示されている道路は、2011/4/8の0時~24時の間に通行実績のあった道路を示しています。[Center]





VIEW α VIEW β

A	01 Automated PMV for limited area	C	07 Real time pedestrian & bicycle locator	D	38 Map with travel time	H	45 Emergency call system	
	02 Carrier car for PMV		08 Emergency automatic stop system for unexpected driver condition (Stop control)		16 Personal mobility		39 Priority traveling high-occupancy vehicle lane highway	46 Adoptive cruise control system for traffic congestion
	03 ID card for multi-modal		09 Emergency automatic stop system for unexpected driver condition (maneuver and stop control)		24 Telephone system using location information		40 Parking spot locator	47 Visible light communication
B	04 School and pedestrian zone speed limit	18 Street view with historical data/traffic historical trajectory	25 Coupling system for traveler with the same destination	E	41 Platooning for low visibility persons	G	52 Driverless automatic Parking system	
	05 Virtual signal by P2V communication	19 Real time street view	26 Around view monitor system with camera Omni-directional camera		42 Pedestrian and bicycle Position monitoring system		48 Travel speed control system based on traffic density in motorway	
	06 Platooning with limited number of the vehicles	20 Predicted street view	27 Advertisement and travel information distribution by location information		43 Intersection fast in fast out guidance systems		49 Cooperative ACC	
	11 Personal vehicle for elderly persons	21 Data collection type probe car	28 Express way only platooning	44 Traffic light cooperation type adoptive cruise control system	50 Road recovery service (platooning, probe system)		55 Traffic flow control system with incentive system	
	12 Precise location bus Stop for easy boarding	22 Seamless communication device	29 Around view monitor cruise control system	45 Energy sharing system Between EV	51 Emergency electronic power supply		56 Flexible signal control system for non-stop intersection passing	
	13 Pedestrian locator	23 Vehicle with the driver health care function	30 Vehicle camera	46 Pedestrian and bicycle Position monitoring system			57 Charging location guidance system for EV, pHV	
	14 Inattentive driving prevention support system		31 Communication system with camera subject	47 Intersection fast in fast out guidance systems			58 Charging system according to CO2 emission	
	15 Lane change support system			48 Traffic light cooperation type adoptive cruise control system				
				49 Demand transport system				



多様な都市の中核機能を果たすITS

A	1. 都市計画・土地利用	2. 交通・物流	3. 防災・安全
B	4. 環境・エネルギー	5. 社会福祉・高齢者対応	6. 観光・文化
C	7. 産業・経済	8. 教育・研究開発	9. 行政・ガバナンス
D	10. 国際化・グローバル化	11. 都市再生・再開発	12. 都市インフラ



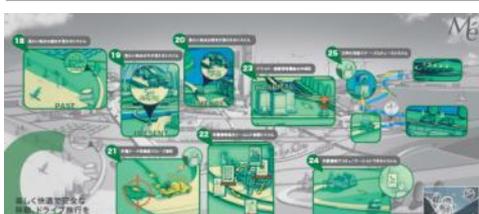
多様な都市の中核機能を果たすITS

A	13. 都市計画・土地利用	14. 交通・物流	15. 防災・安全
B	16. 環境・エネルギー	17. 社会福祉・高齢者対応	18. 観光・文化
C	19. 産業・経済	20. 教育・研究開発	21. 行政・ガバナンス
D	22. 国際化・グローバル化	23. 都市再生・再開発	24. 都市インフラ



多様な都市の中核機能を果たすITS

A	25. 都市計画・土地利用	26. 交通・物流	27. 防災・安全
B	28. 環境・エネルギー	29. 社会福祉・高齢者対応	30. 観光・文化
C	31. 産業・経済	32. 教育・研究開発	33. 行政・ガバナンス
D	34. 国際化・グローバル化	35. 都市再生・再開発	36. 都市インフラ



多様な都市の中核機能を果たすITS

A	37. 都市計画・土地利用	38. 交通・物流	39. 防災・安全
B	40. 環境・エネルギー	41. 社会福祉・高齢者対応	42. 観光・文化
C	43. 産業・経済	44. 教育・研究開発	45. 行政・ガバナンス
D	46. 国際化・グローバル化	47. 都市再生・再開発	48. 都市インフラ



多様な都市の中核機能を果たすITS

A	49. 都市計画・土地利用	50. 交通・物流	51. 防災・安全
B	52. 環境・エネルギー	53. 社会福祉・高齢者対応	54. 観光・文化
C	55. 産業・経済	56. 教育・研究開発	57. 行政・ガバナンス
D	58. 国際化・グローバル化	59. 都市再生・再開発	60. 都市インフラ



多様な都市の中核機能を果たすITS

A	61. 都市計画・土地利用	62. 交通・物流	63. 防災・安全
B	64. 環境・エネルギー	65. 社会福祉・高齢者対応	66. 観光・文化
C	67. 産業・経済	68. 教育・研究開発	69. 行政・ガバナンス
D	70. 国際化・グローバル化	71. 都市再生・再開発	72. 都市インフラ



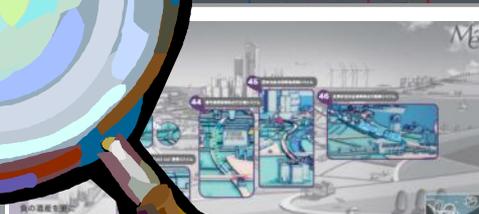
多様な都市の中核機能を果たすITS

A	73. 都市計画・土地利用	74. 交通・物流	75. 防災・安全
B	76. 環境・エネルギー	77. 社会福祉・高齢者対応	78. 観光・文化
C	79. 産業・経済	80. 教育・研究開発	81. 行政・ガバナンス
D	82. 国際化・グローバル化	83. 都市再生・再開発	84. 都市インフラ



多様な都市の中核機能を果たすITS

A	85. 都市計画・土地利用	86. 交通・物流	87. 防災・安全
B	88. 環境・エネルギー	89. 社会福祉・高齢者対応	90. 観光・文化
C	91. 産業・経済	92. 教育・研究開発	93. 行政・ガバナンス
D	94. 国際化・グローバル化	95. 都市再生・再開発	96. 都市インフラ



多様な都市の中核機能を果たすITS

A	97. 都市計画・土地利用	98. 交通・物流	99. 防災・安全
B	100. 環境・エネルギー	101. 社会福祉・高齢者対応	102. 観光・文化
C	103. 産業・経済	104. 教育・研究開発	105. 行政・ガバナンス
D	106. 国際化・グローバル化	107. 都市再生・再開発	108. 都市インフラ



多様な都市の中核機能を果たすITS

A	109. 都市計画・土地利用	110. 交通・物流	111. 防災・安全
B	112. 環境・エネルギー	113. 社会福祉・高齢者対応	114. 観光・文化
C	115. 産業・経済	116. 教育・研究開発	117. 行政・ガバナンス
D	118. 国際化・グローバル化	119. 都市再生・再開発	120. 都市インフラ



多様な都市の中核機能を果たすITS

A	121. 都市計画・土地利用	122. 交通・物流	123. 防災・安全
B	124. 環境・エネルギー	125. 社会福祉・高齢者対応	126. 観光・文化
C	127. 産業・経済	128. 教育・研究開発	129. 行政・ガバナンス
D	130. 国際化・グローバル化	131. 都市再生・再開発	132. 都市インフラ



多様な都市の中核機能を果たすITS

A	133. 都市計画・土地利用	134. 交通・物流	135. 防災・安全
B	136. 環境・エネルギー	137. 社会福祉・高齢者対応	138. 観光・文化
C	139. 産業・経済	140. 教育・研究開発	141. 行政・ガバナンス
D	142. 国際化・グローバル化	143. 都市再生・再開発	144. 都市インフラ

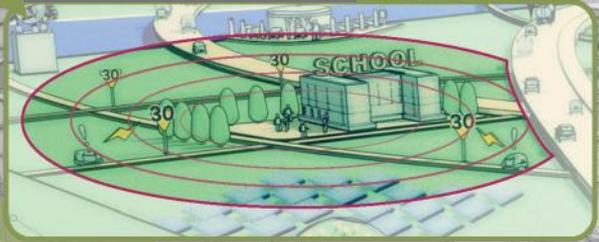


多様な都市の中核機能を果たすITS

A	145. 都市計画・土地利用	146. 交通・物流	147. 防災・安全
B	148. 環境・エネルギー	149. 社会福祉・高齢者対応	150. 観光・文化
C	151. 産業・経済	152. 教育・研究開発	153. 行政・ガバナンス
D	154. 国際化・グローバル化	155. 都市再生・再開発	156. 都市インフラ



04 School and pedestrian zone speed limit



06 Platooning with limited number of the vehicles



09 Emergency automatic stop system for unexpected driver condition (maneuver and stop control)



08 Emergency automatic stop system for unexpected driver condition (stop control)



07 Real time pedestrian & bicycle locator



05 Virtual signal by P2V communication



B : Easy travel for everybody

VIEW α VIEW β

A	01 Automated PMV for limited area	02 Carrier car for PMV	03 ID card for multi-modal	07 Real time pedestrian & bicycle locator	08 Emergency automatic stop system for unexpected driver condition (Stop control)	09 Emergency automatic stop system for unexpected driver condition (maneuver and stop control)	10 Transport recommendation services for personal needs	11 Personal vehicle for elderly persons	04 School and pedestrian zone speed limit	05 Virtual signal by P2V communication	06 Platooning with limited number of the vehicles	12 Precise location bus Stop for easy boarding	13 Pedestrian locator	14 Inattentive driver prevention support system	15 Lane change support system	16 Personal mobility	17 Intersection collision prevention support system	18 Street view with historical data/traffic historical trajectory	19 Real time street view	20 Predicted street view	21 Data collection type probe car	22 Seamless communication device	23 Vehicle with the driver health care function	24 Telephone system using location information	25 Coupling system for traveler with the same destination	26 Around view monitor system with camera Omni-directional camera	27 Advertisement and travel information distribution by location information	28 Express way only platooning	29 Around view monitor cruise control system	30 Vehicle camera	31 Communication system with camera subject	37 Demand transport system	B	32 Platoon in exclusive lane	33 Platoon in mixed traffic	34 Energy sharing system Between EV	35 Traffic light control system based on the number of travelers	36 Personal information recorded driving support card	38 Map with travel time	39 Priority traveling high-occupancy vehicle lane highway	40 Parking spot locator	41 Platooning for low visibility persons	42 Pedestrian and bicycle Position monitoring system	43 Intersection fast in fast out guidance systems	44 Traffic light cooperation type adoptive cruise control system	45 Emergency call system	46 Adoptive cruise control system for traffic congestion	47 Visible light communication	48 Travel speed control system based on traffic density in motorway	49 Cooperative ACC	C	52 Driverless automatic Parking system	53 Urban automatic driving	55 Traffic flow control system with incentive system	56 Flexible signal control system for non-stop intersection passing	57 Charging location guidance system for EV, pHV	58 Charging system according to CO2 emission
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20th ITS WORLD CONGRESS TOKYO 2013

Period : October 14th to 18th ,2013



ITS Green Safety is the cutting edge national cooperative ITS project showcase on the metropolitan Tokyo public road.

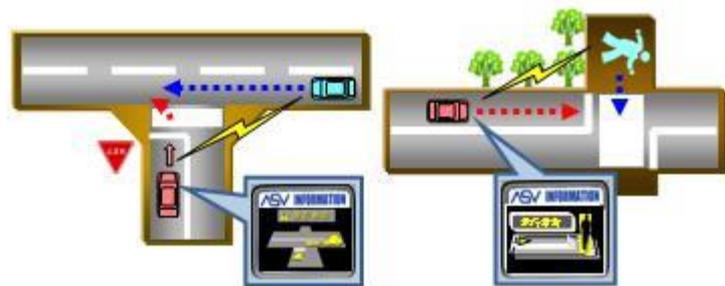
GS1 Next Generation DSSS (I2V)

Intersection collision avoidance & Eco drive support utilizing signal information



GS2 Cooperative Advanced Safety Vehicles (V2V, V2P)

Intersection driving support systems by V2V, V2P communication



GS4 Cooperative Service towards Smooth Traffic Flow at expressway SAG sections (I2V, V2V)

Mitigating SAGs-congestions on expressways utilizing ITS Spot and ACC/CACC



ITS GREEN SAFETY

For a Greener & Safer Traffic Society



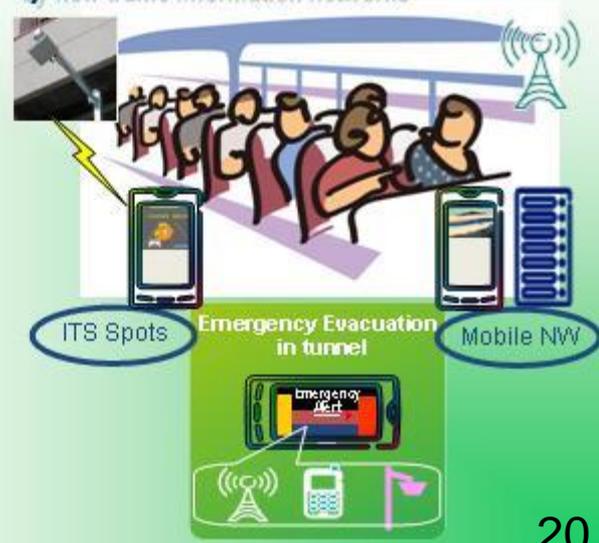
GS3 ITS Spot Services (I2V)

Experience on the Tokyo metropolitan expressway the world's first cooperative service



GS5 New Generation Cooperative ITS Services linking ITS Spots and mobile network (I2V)

Safe and comfortable urban transportation by new traffic information networks





END